

Current Quality Program



ERIC JABS
QUALITY PROGRAM MEETING
MARCH 20-21, 2012



United States Department of Agriculture
Grain Inspection, Packers and Stockyards Administration
Federal Grain Inspection Service

Quality Program Elements



- Sample Inspections and Monitoring System (SIMS)
 - Approximately 1% selection based on stratified sampling rate
 - ✦ U.S. #1, 0.2%; U.S. #2, 0.7%; U.S. #3-6, 3.0%; U.S. SG, 0.6%
 - Can target/flag additional samples based on factor/other criteria
 - National and Local
 - ✦ Local ranges from 0-40%
 - ✦ National ranges from 60-100%
 - Includes field office and GSL monitoring
 - Does not include official commercial inspection service (OCIS), roundlots in rice, individual railcars from unit trains loaded under cu-sum, or individual containers from an average grade booking.



Quality Program Elements



- Subjective Testing and Evaluation Process (STEPS)
 - BAR selects samples from SIMS based on critical control points/factor criteria
 - Used to evaluate interpretative lines
 - Plus, minus, and score is provided to inspectors
 - National and Local
 - Percentage varies based on quality
- FOM Select Program
 - Field office manager selects factor separations made by QAS in addition to national STEPS
 - Not currently available in QAC



Quality Program Elements



- Referee Sample Exchange Program
 - Work portions sent to inspectors for factor analysis and the same work portion graded by the BAR or QAS to eliminate sample variation
- Survey Sample Program
 - Identifies a current problem, subdivides a sample into several work portions, and compare BAR/QAS average results to inspector results
- Opinion Samples
 - Inspectors submit challenging/controversial separations to the QAS or BAR for review



Quality Program Elements



- Onsite/Over-the-Shoulder (OTS)
 - QAS evaluates an inspectors grading skills, separations, odor determinations, etc. onsite and gives immediate feedback
- Check Samples
 - Inspect a sample twice to self-monitor an equipment process or grading procedure
- Same Portion Monitoring
 - QAS monitors an inspectors recombined work portion with knowing the original results to reduce bias
- Site Visits
 - Periodic visits to service points to observe inspection activities, equipment use, office operation, and OTS monitoring



Quality Program Elements



- Reference Samples
 - QAS uses a consistent/known quality of grain to measure the consistency of equipment and interpretative factor variability
- Intermarket Monitoring
 - Measures origin and destination results on barge and rail shipments to evaluate the performance of the official system
- Early Alert Program
 - Official Service Providers (OSP's) monitor market conditions and alert the BAR of any current/anticipated grading problems
 - BAR and OSP initiate steps to prevent/correct grading problems



Quality Program Elements



- Crop Quality Studies
 - Studies to evaluate moisture ranges, new crop quality, export quality, inspection quality, etc.
- Anchor Agreements
 - Agreements to maintain alignment on interpretative factors and subfactors
 - BAR and field office/official agency
 - Field office and official agency



Quality Program Elements



- *FGISonline*
 - Inspection Data Warehouse (IDW)
 - Inspection, Testing, and Weighing (ITW)
 - Quality Assurance/Quality Control (QAC)
 - Equipment Capability Testing (ECT)
 - Delegation, Designation, and Export Registration (DDR)
 - FGIS Official Service Provider Licensing (FOL)
 - Certificates (CRT)
 - GIPSA Billing Application (GBA)



Quality Program Elements



- Quality Management Program
 - Mends quality management principles with the legal and regulatory requirements of the U.S. Grain Standards Act and Agricultural Marketing Act
 - Quality manual
 - Annual internal audits
 - QMP onsite review



Case Study: Corn Damage (Agency Level)



- Evaluate original inspection and supervision process for all OSP's
- Total corn inspections
- SIMS corn damage inspections
 - SIMS corn damage tolerance limits
- SIMS warning/action limits
- STEPS corn damage inspections
- Statistical Measurement
 - Targeted selection based on standard deviation, which measures variability of original versus supervised



Case Study: Corn Damage (Agency Level)



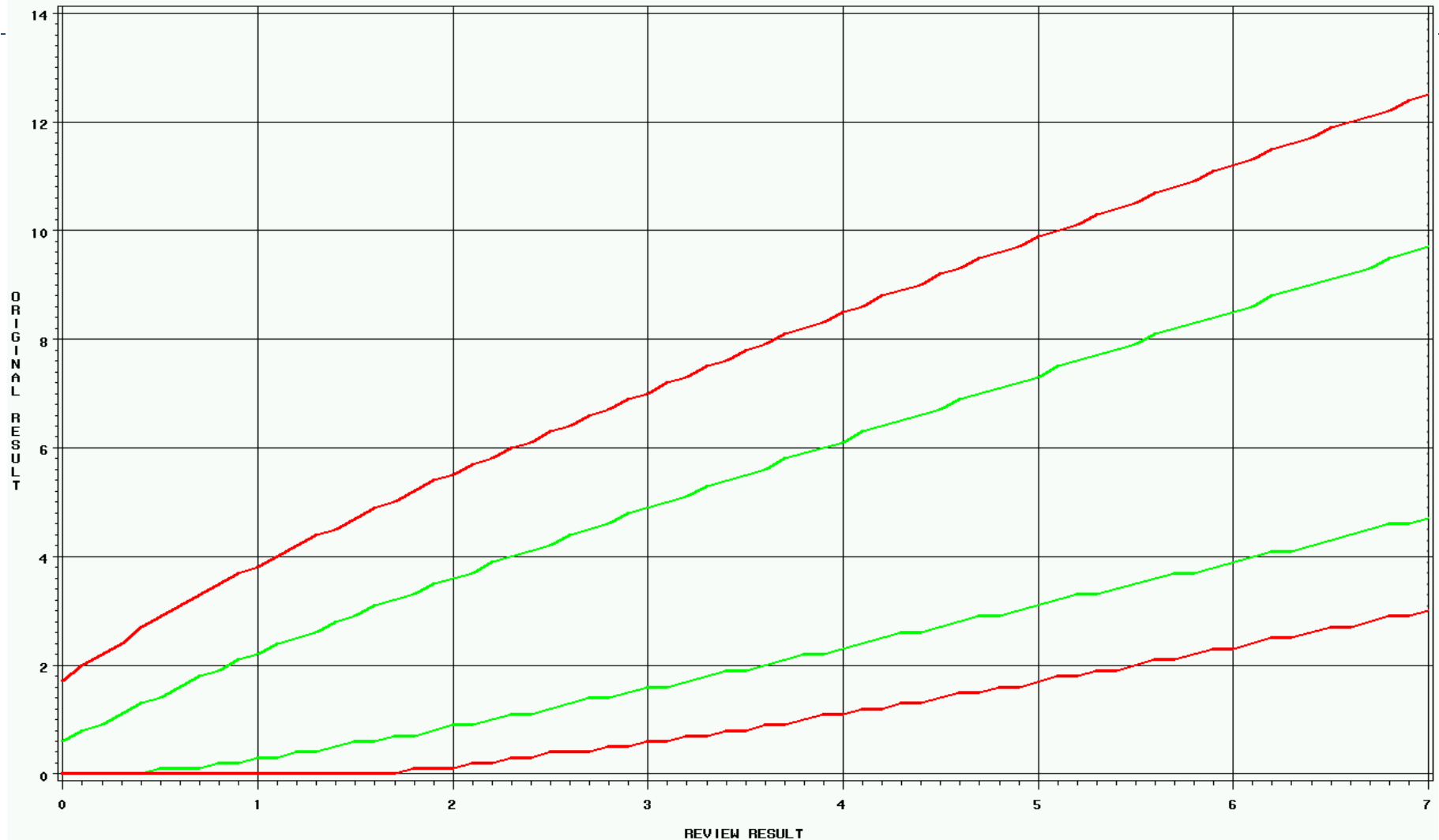
FY 2011

- 897,645 corn inspections
 - Includes official lot, official submit, and export
- 5,473 SIMS
 - 0.6% overall monitoring rate
 - Standard deviation ranges from 0.01 to 0.64 with an average of 0.20
 - Statistical monitoring rate to achieve a 95% confidence interval of $\pm 0.10\%$ DKT would vary from 0.1% to 15.6%.
 - Actual monitoring rate varied from 0% to 20.8%
 - Increase/decrease samples based on higher/lower variability
- 1,274 STEPS
 - 23.3% of SIMS selected for separation review



Case Study: Corn Damage (Agency Level)

SIMS TOLERANCE LIMITS — CORN DAMAGED KERNELS (TOTAL)



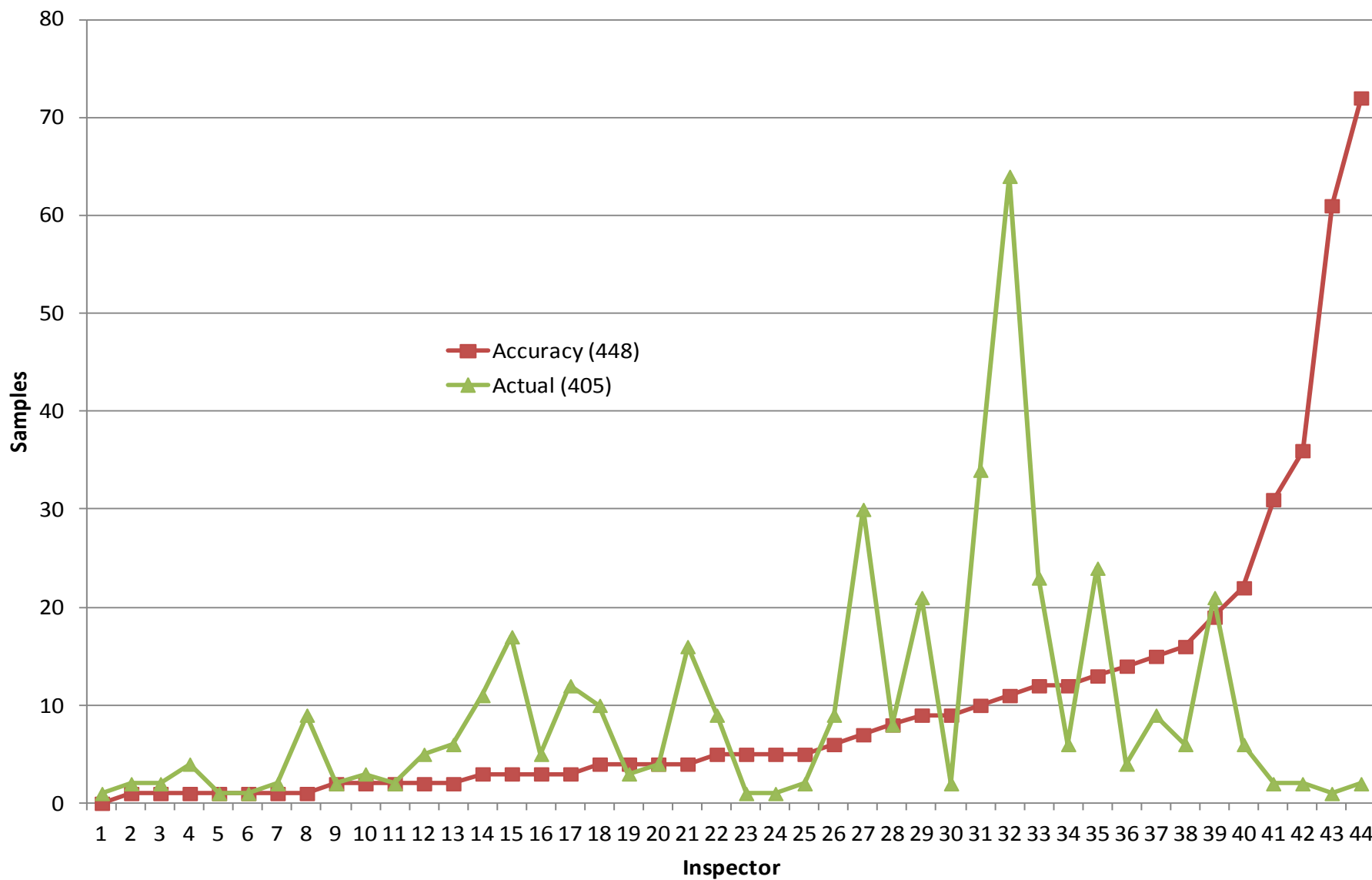
Case Study: Corn Damage (Inspector Level)



- FY 2011 data
- Evaluate an inspection agency by looking at inspector level SIMS and STEPS data for Corn DKT
- Use inspector accuracy (average standard deviation) to target SIM and STEP supervision samples for each inspector.
 - 95% Confidence Interval +/- 0.5% DKT
- Compare the targeted results to the actual SIMS and STEP supervision levels.

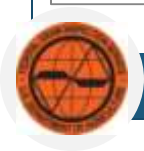
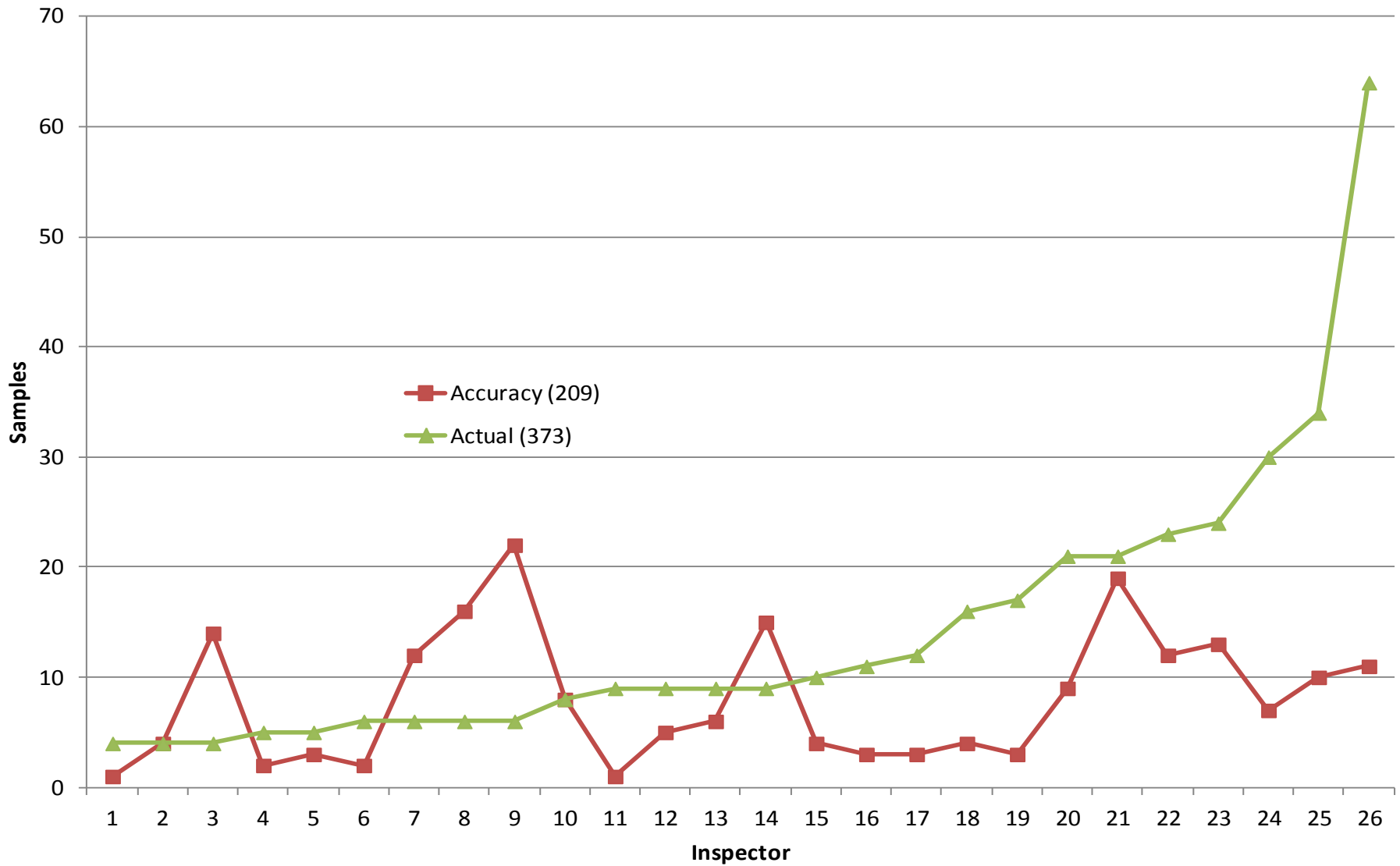


Corn Damage SIMS Selection

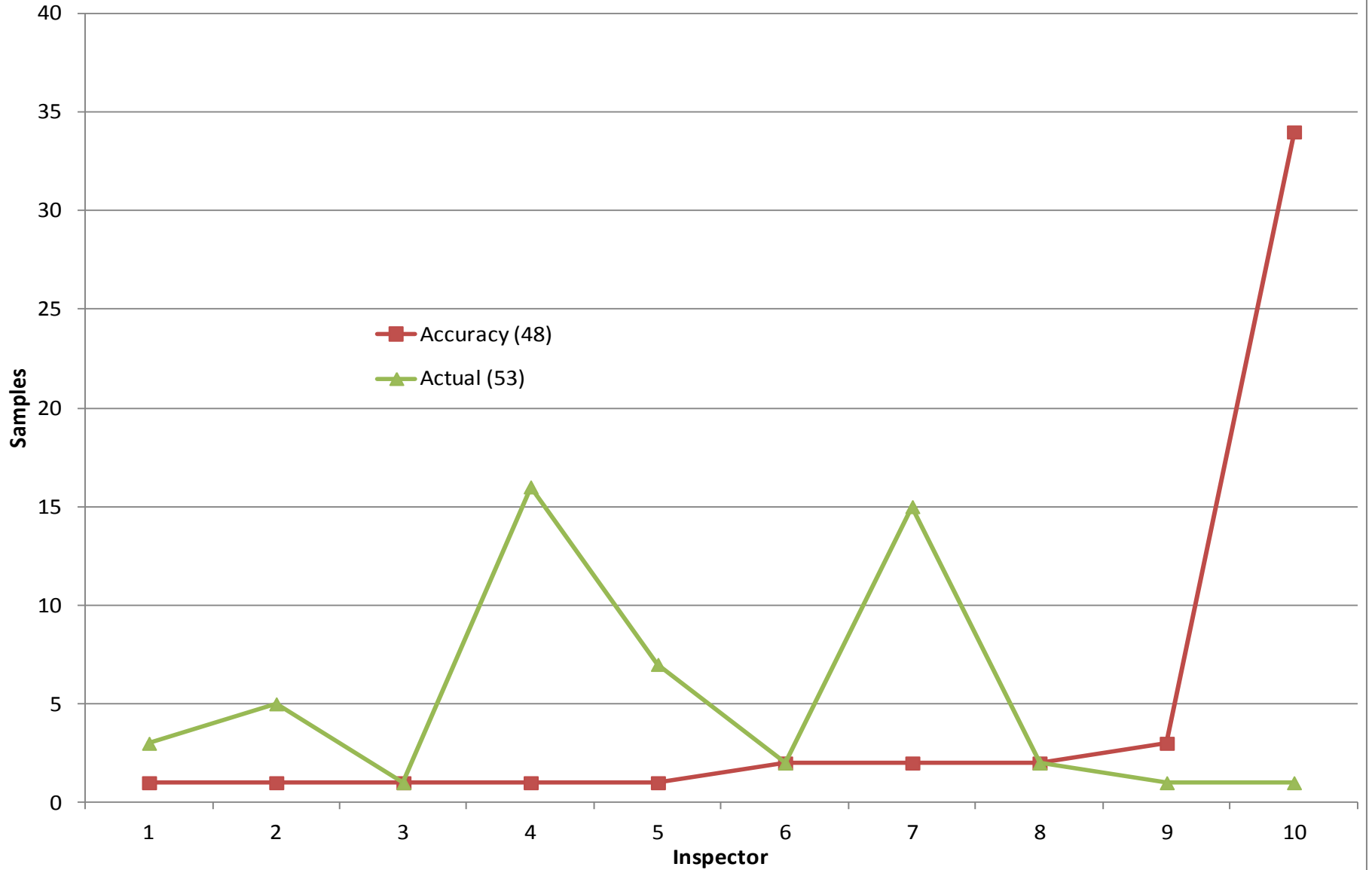


Corn Damage SIMS Selection

(Inspectors ≥ 4 SIMS)

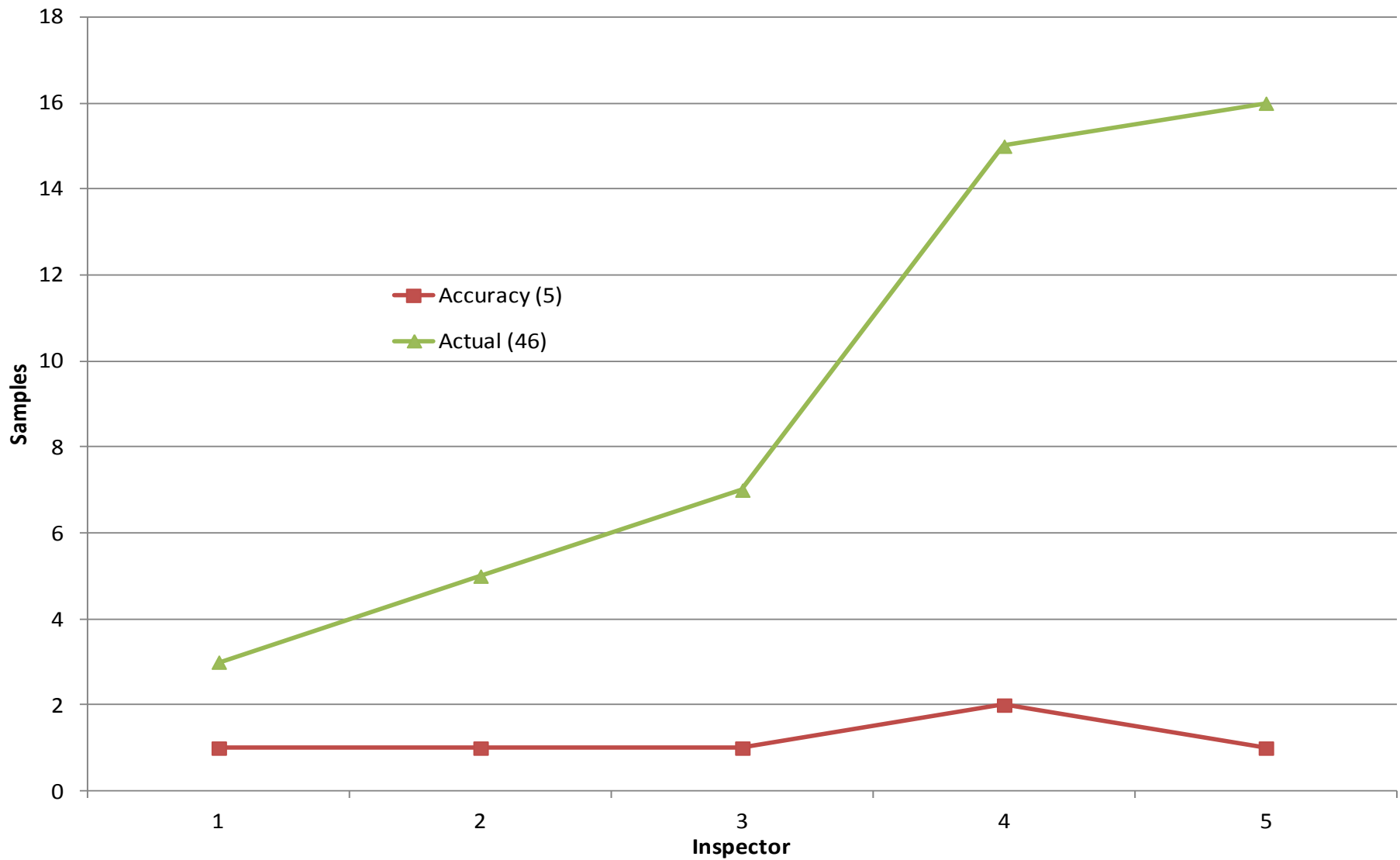


Corn Damage STEPS Selection



Corn Damage STEPS Selection

Inspectors ≥ 3 STEPS



Model Sensitivities



- Target selection based on the factor
 - When DKT was high (e.g., 50%), inspector accuracy generally decreased
 - ✦ Outlier data significantly raised the level of inspector monitoring
 - ✦ Outlier data may not be meaningful to target monitoring samples
- Identify acceptable tolerance ranges for each grain and factor
 - Example: Corn DKT, +/- 0.50%
- Define minimum number of SIMS and/or STEP samples for measuring accuracy
- Identify time period to evaluate inspector accuracy
 - Example: 3 month moving average
- Minimum and maximum monitoring levels
 - Example: 0.25% to 5.0%

Key Statistics



FY 2011

- **Warning Limits**

- 4,502 total
- Number: Range, 1 to 640; Average, 90
- Percentage: Range, 0% to 17.25%; Average, 7.6%

- **Action Limits**

- 657 total
- Number: Range, 0 to 91; Average, 13
- Percentage: Range, 0% to 4.65%; Average, 1.1%

- **Samples Received (SIMS)**

- National Number: Range, 1 to 147; Average, 24.5
- National Percentage: Range, 0% to 97.8%; Average, 79.5%
- Local Number: Range, 1 to 287; Average, 22.4
- Local Percentage: Range, 0% to 99.5%; Average, 76.9%



Summary



- Current quality tools
 - Evaluate effectiveness
 - Add, modify, delete
- Use inspector accuracy to target supervision
 - Evaluate variability by grain/factor
 - Define an acceptable tolerance
 - Variability determines inspection levels
- Develop performance criteria to evaluate OSP's
 - Key measurements of OSP performance
- Revise QMP to include performance criteria
 - Comprehensive evaluation of OSP operations
- Continuous Improvement



Questions

